## Drug and Therapeutics Committee Training Course

# Session 7: Identifying Problems with Drug Use

Participant's Guide

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#### **PURPOSE AND CONTENT**

The purpose of this session is to introduce the participant to methods of identifying drug use problems in hospitals and primary care clinics. Many drug use problems are difficult to detect on a day-to-day basis unless they are very obvious. The use of the methodologies in this session will enable Drug and Therapeutics Committee (DTC) members to evaluate drug use more closely and discover those problems that over time will impact drug use and patient care.

## **Objectives**

Upon completion of this session, participants will be able to—

- Describe how indicators can be used to identify drug use problems
- Discuss the use of aggregate data including defined daily dose (DDD) to analyze the consumption of drugs
- Perform an ABC analysis and explain how it can be used to identify drug use problems, reduce costs, and improve efficiency in the drug supply system
- Discuss how the VEN system for setting priorities will assist the DTC to make better decisions for drug purchases, inventory management, improving efficiency, drug use reviews, etc.

## **Preparation**

#### Read:

- Managing Drug Supply, Chapter 41, "Financing and Sustainability"
- Managing Drug Supply, Chapter 29, "Investigating Drug Use"
- Participant's Guide

## **Further Readings**

Action Programme on Essential Drugs. *How to investigate drug use in health facilities*. World Health Organization. 1993.

WHO Collaborating Centre for Drug Statistics Methodology. *Guidelines for ATC classification and DDD assignment*. Oslo, Norway: WHO. 2000.



#### INTRODUCTION

The DTC has many functions and responsibilities, including evaluation and selection of drugs for the formulary, identifying drug use problems, and promoting drug strategies to improve drug use. This session reviews the methods to identify drug use problems in the health care system.

Inappropriate drug use results in poor patient outcomes and wastes significant amounts of money and resources. This is a worldwide problem, especially in developing countries. The impact on the health care system of inappropriate drug use is dramatic—

- Reduction in the quality of drug therapy leading to increased morbidity and mortality
- Increased cost as a result of using the wrong drug, dose, route, amount, etc., and because of treatment failures
- Increased risk of unwanted effects such as adverse drug reactions and emergence of antimicrobial resistance

The DTC must have programs to evaluate and assess drug use in order to identify those areas that need to be improved. It may not be obvious what the particular drug problem is until analysis of the drug use is undertaken. There are many different methods to gain access to information about drug use. In this session we will discuss the following important programs for identifying drug use problems:

- Health care facility and hospital drug use indicators
- Aggregate data on drug consumption and drug use
  - o Defined daily dose
  - o ABC analysis
  - VEN analysis
- Patient record reviews
- Drug use evaluation

#### INDICATORS FOR HEALTH CARE FACILITIES

Drug use indicators are intended to measure specific aspects of health providers and drug use in a hospital or health center. Indicators will provide information to health care managers concerning drug use, prescribing habits, and important aspects of patient care. They reflect the status of an important characteristic of the given health care service.

#### CHARACTERISTICS OF SOUND INDICATORS

Indicators selected to assess a health care service should be relevant, easily generated and measured, valid, consistent, reliable, representative, sensitive to change, understandable, and action-oriented.

- Relevant—An indicator should reflect progress toward stated national and/or program goals, objectives, or standards.
- Easily generated and measured—As far as possible, data for essential indicators should result from normal service and surveillance activities, and they should be found in routine records and reports.
- Reliable— Each indicator must give consistent results over time and with different observers. If one observer reports a certain result from a set of data, it is expected that a second observer will report the same result.
- Valid— Each indicator must allow a consistent and clear interpretation and have a similar meaning across different environments.
- Action-oriented—The data needed for an indicator should be useful for those doing the recording, whether they are physicians, pharmacists, nurses, or other staff; the data must lead to necessary action to improve use of drugs.

Drug use indicators have been developed by many different organizations, hospitals, and governments to identify drug use problems. The World Health Organization (WHO) has developed a set of standardized indicators that have been successfully used in many different countries to identify drug use problems. These indicators of drug use are basic, highly standardized, and have been reliably used and tested over years in many different countries. They can be used in almost any country and will give reproducible results when trained personnel utilize the indicators. Indicator studies can serve several useful purposes—

- Determine where drug use problems exist—When an indicator study shows results that are unacceptable to the DTC, then action can be taken to improve these results. This is usually done by comparing health care facilities indicators to determine if a significant difference is exhibited.
- Provide a monitoring mechanism—Repeating the study over a period of a year or several
  years will provide reliable information concerning the use of strategies to improve the
  drug use problem.
- Motivate health care providers to improve and follow established health care standards.

Some of the standardized indicators that WHO recommend are as follows (Action Programme on Essential Drugs 1993\*):

#### **Core Drug Use Indicators**

- Prescribing indicators
  - Average number of drugs per encounter
  - o Percentage of drugs prescribed by generic name
  - o Percentage of encounters with an antibiotic prescribed
  - Percentage of encounters with an injection prescribed
  - o Percentage of drugs prescribed from essential drugs list or formulary
- Patient care indicators
  - Average consultation time
  - o Average dispensing time
  - o Percentage of drugs actually dispensed
  - o Percentage of drugs adequately labeled
  - o Patients' knowledge of correct doses
- Facility indicators
  - o Availability of essential drugs list or formulary to practitioners
  - Availability of key drugs

#### **Complementary Drug Use Indicators**

- Percentage of patients treated without drugs
- Average drug cost per encounter
- Percentage of drug cost spent on antibiotics
- Percentage of drug cost spent on injections
- Percentage of prescriptions in accordance with treatment guidelines
- Percentage of patients satisfied with the care they receive
- Percentage of health facilities with access to impartial drug information

These indicators represent a small number of core indicators that have been successfully used. Other indicators can be added as needed to be more complete, but they may not have been tested for reliability as these have. Results with these indicators should point to particular drug use problems that need further examination in more detail and ultimately a plan to resolve the problem by the DTC.

<sup>\*</sup> Action Programme on Essential Drugs. *How to investigate drug use in health facilities*. World Health Organization. 1993, pp. 1–87.

Performing an indicator study involves planning, logistics, time, and funding. The indicator study will involve—

- Determining objectives, priorities of the study, indicators, and indicator recording forms
- Training data collectors
- Randomly selecting facilities in the region from which to collect data
- Obtaining data from approximately 30–50 drug use encounters for each facility
- Analyzing data
- Providing results to the DTC for evaluation and follow-up

Typically, researchers collect drug use data from a sample of health facilities in a region or district. The number of health care facilities from which to obtain data is variable but should include at least 20 facilities with 30 to 50 drug use encounters for each facility. This would give a total sample of at least 600 encounters to which to apply the indicators to evaluate drug use. In smaller health care systems, these numbers would need to be adjusted appropriately. If the objective is to study prescribers in one facility, at least 100 prescriptions should be obtained at a single facility or for each individual prescriber.

Data collected can be compared to local drug use statistics, regional statistics, or international statistics. The results can be used as follows:

- Describing current treatment practices
- Comparing the performance of individual facilities or prescribers
- Periodic monitoring and supervision of specific drug use behaviors
- Identifying potential drug problems that affect patient care
- Assessing the impact of an intervention

Once a potential problem is identified, the DTC must be prepared to formulate a strategy to correct the problem. The strategies that may be used include managerial (drug use evaluation, use of standard treatment guidelines, structured ordered forms), educational (face-to-face-instruction, in-service education), and regulatory interventions.

#### **HOSPITAL INDICATORS**

In response to antimicrobial drug resistance problems worldwide, Management Sciences for Health developed a manual for assessment of antimicrobial drug use in hospitals. This manual\* is a tool for hospital managers to assess antimicrobial drug management and use and thus contribute to reducing antibiotic misuse.

The manual is intended for use by hospital Drug and Therapeutics Committees (DTCs), physicians, pharmacists, and managers, as well as drug use researchers, who wish to evaluate and

<sup>\*</sup> Rational Pharmaceutical Management Plus Program. May 2001. *How to Investigate Microbial Drug Use in Hospitals: Selected Indicators*. Draft Published for the U.S. Agency for International Development by the Rational Pharmaceutical Plus Program. Arlington, VA: Management Sciences for Health.

improve antimicrobial drug use in hospitals. It will allow basic comparisons of antimicrobial drug use in a hospital over time and between hospitals.

The manual is divided into two sections. The first describes the indicators for antimicrobial drug use and management according to a standard format, and the second suggests procedures to apply them in a hospital study. The following indicators are presented in this manual for use by hospitals:

#### **Hospital Indicators**

- 1. Existence of standard treatment guidelines (STGs) and a list of officially sanctioned antimicrobial drugs in a formulary list (FL)
- 2. Availability of a key set of indicator antimicrobial drugs in the hospital stores on the day of the study
- 3. Average number of days that a set of key antimicrobial drugs is out of stock in a 12-month period
- 4. Expenditure on antimicrobial drugs as percentage of total hospital drug costs

#### **Prescribing Indicators**

- 5. Percentage of hospitalizations with one or more antimicrobial drugs prescribed
- 6. Average number of antimicrobial drugs prescribed per hospitalization with antimicrobial drugs prescribed
- 7. Percentage of antimicrobial drugs prescribed consistent with the hospital formulary list<sup>1</sup>
- 8. Average cost of antimicrobial drugs prescribed per hospitalization with antimicrobial drugs prescribed
- 9. Average duration of prescribed antimicrobial drug treatment
- 10. Percentage of surgical patients who received antimicrobial drug prophylaxis
- 11. Percentage of patients with pneumonia who are prescribed antimicrobial drugs in accordance with standard treatment guidelines
- 12. Percentage of antimicrobials prescribed by generic name

<sup>&</sup>lt;sup>1</sup> This may or may not be a part of the national essential drugs list or formulary list.

#### **Patient Care Indicators**

- 13. Percentage of doses of prescribed antimicrobial drugs actually administered
- 14. Average duration of hospital stay of patients who receive antimicrobial drugs

#### **Supplemental Indicator**

15. Number of antimicrobial drug sensitivity tests reported per hospital admission including antimicrobial treatment

#### AGGREGATE DATA

Aggregate data on drug use can be obtained from many sources within the health care system. These data sources include procurement records, warehouse drug records, pharmacy stock and dispensing records, medication error records, adverse drug reaction records, and patient medical records. These data sources can be used to obtain a variety of information, including the following:

- Drug cost data for individual drugs and for drug classes
- Most expensive drugs used in the health care system
- Most frequently used drugs
- Infrequently used drugs
- Percentage of budget spent on certain drugs or drug classes
- Comparison of two or more drugs used for the same indication (comparing cost, quantity used, adverse side effects)
- Per capita use of specific products
- Relative use of therapeutically substitutable products (e.g., cefotetan and cefoxitin)
- Prevalence of adverse drug reactions (from reporting forms or from chart reviews)
- Prevalence of medication errors (from error report forms)

Careful review of these records will provide the DTC with insight concerning drug use, cost of drugs, incidence of drug reactions, error in administration and dispensing, and others. Any identified problems discovered in reviewing these data must be promptly analyzed by the DTC and a strategy to remedy the problem must be instituted.

## **Defined Daily Dose**

When using aggregate data it is often necessary to compare consumption of a particular drug to another drug and to consumption in other hospitals or countries. If the primary focus of a study is drug cost, then doses can be converted to monetary units and a comparison made on equivalent currencies. If the primary focus is on clinical aspects of drug use, then it is much more difficult to make comparison. One method that is widely ascribed to and recommended by the World Health Organization is the defined daily dose (DDD). The DDD is a tool to analyze drug utilization with the ultimate goal of improving drug use.

DDD is the typical daily dose of a drug used to treat the most common medical problem for which the drug is prescribed. The DDD represents the maintenance dose of the product for adults. This measurement of drug usage is valuable for determining the amount of drug used related to a defined population. There are several different methods for utilizing DDD to describe drug consumption—

- Most frequently used method—number of DDDs per 1,000 inhabitants per day
- Hospital drug consumption—DDD/100 bed days
- Antimicrobials utilization—DDD/inhabitant/year, which gives the average number of days a patient is taking antimicrobials during a defined period of one year

When such calculations are performed at the national level, the population may be the total population or relevant subgroups. Converting aggregate quantities to DDD indicates roughly how many potential treatment days of the drug are procured or consumed.

DDDs are advantageous for comparing the use of a drug in one hospital or region with other hospitals or regions because it creates a standard measure. This comparison will provide valuable information when establishing appropriate usage levels of drugs.

There are several important points to be considered concerning DDDs—

- The DDD is a technical unit of measurement and not always the dose prescribed or used. What is actually prescribed can vary according to both the illness treated and the national therapy traditions. When what is actually prescribed differs significantly from the DDD, the reasons and implications should be understood for a correct interpretation.
- DDDs provide a fixed unit of measurement independent of price and formulation, making
  it possible to assess trends in drug consumption and to perform comparisons between
  population groups and health care systems.
- DDDs have not been established for topical drugs, vaccines, general/local anesthetics, contrast media, and allergen extracts.
- The DDD is nearly always a compromise dose, not the actual dose used. It is based on a

review of the available information, including doses used in various countries when this information is available. Therefore, it is more of an average of two or more commonly used dose sizes.

The DDD can be obtained from two sources. The official list is published periodically by the WHO Collaborating Centre for Drug Statistics Methodology in Oslo, Norway. Management Sciences for Health also publishes assigned DDDs in the *International Drug Price Indicator Guide*, most recently published in 2000.

#### **Example of a Calculation Utilizing DDD**

District hospital and clinics use 25,000 tablets yearly of methyldopa 250mg and 3,000 tablets yearly of methyldopa 500mg. This drug usage is for a population of 2,000,000 people.

The consumption of methyldopa utilizing DDD methodology would be as follows:

Quantity of drug used in one year multiplied by the strength of the product (25,000 X 250mg) + (3,000 X 500mg) = 7,750,000mg (7,750gm) (total quantity consumed)

Divide total quantity by the assigned DDD for that drug (for methyldopa this is 1gm) 7,750 gm / 1 gm = 7,750 DDD

Divide total quantity by 2,000,000 and multiply by 1,000 (this is the population denominator for this method) to obtain the DDD / 1,000 inhabitants / year (divide by 365 to obtain DDD/1,000 inhabitants/day)

DDD / 1,000 inhabitants / year = 3.8 DDD/ 1,000 inhabitants / day = 0.01

This calculated dose could then be used to compare consumption of this drug to other hospitals, regions, or countries. The DDD can also be used to compare consumption in the same region over extended periods of time.

## **ABC Analysis**

ABC analysis is a method for determining and comparing drug cost within the formulary system. The basic principles behind the ABC analysis may be applied to a variety of situations in which attention can be given to only a subset of issues or concerns.

The 80/20 rule, also known as the Pareto Principle, is based on observations made by an Italian economist, Vilfredo Pareto. It is also known as "separating the vital few from the trivial many" because for any group of things that contribute to a common effect, a relatively few contributors account for a majority of the effect.

For managers, this principle may be applied to determining which of the many potential improvement opportunities should be pursued first because they would focus their efforts on the few opportunities that would yield the greatest impact.

In terms of drug supply, managers know that only a few inventory items account for the greatest expense or consumption. Based on the same thinking as the 80/20 rule, ABC analysis actually

identifies three useful tiers for analysis: class A items are the few items that account for the highest-cost/highest-volume items. Taken together, they account for 75 percent of the value of drugs purchased or consumed, while class B items comprise the next group of 15 percent, and class C includes low-cost or low-volume items. Managers can begin by concentrating their efforts on the relatively few class A items that will yield the greatest impact.

## Applications of ABC Analysis for a DTC

A DTC can use the ABC analysis for the following applications:

- Measure the degree to which actual consumption reflects public health needs and morbidity.
- Reduce inventory levels and costs by arranging for more frequent purchase or delivery of smaller quantities of class A items.
- Seek major cost reductions by finding lower prices on class A items.
- Reduce inventory of items that have limited use in the system, but cost the system large amounts of money.
- Choose the most cost-effective alternatives and find opportunities for therapeutic substitution. The ABC analysis compares use and cost of items across one particular type of category, which provides information concerning similar drugs and their cost and will project the total cost savings if one drug is used instead of a more expensive alternative.
- Gather information for pharmacoeconomic analysis. ABC analysis will provide basic information for performing a cost-minimization and cost-effectiveness analysis.
- Identify problems of irrational drug use, for example when large quantities of drugs are used relative to morbidity of the country.

Performing an ABC analysis is facilitated by a computer and software that will perform the necessary calculations. A computer is not absolutely necessary, but it becomes more important as the number of line items increases and the complexity of the analysis widens. Management Sciences for Health provides this software free of charge on its web site at <a href="www.msh.org">www.msh.org</a>. It is easy to download and has instructions on use of the software in the "help" section of the main menu.

The eight steps to perform an ABC analysis are as follows:

- 1. List all items purchased or consumed and enter the unit cost.
- 2. Enter consumption quantities (over a defined period of time, e.g., one year).

- 3. Calculate the value of consumption (utilize acquisition cost).
- 4. Calculate the percentage of total value represented by each item.
- 5. Rearrange the list. Rank items in descending order by total value, starting at the top with the highest value.
- 6. Calculate the cumulative percentage of the total value for each item. Beginning with the first item at the top, add the percentage to that of the item below it in the list.
- 7. Choose cutoff points or boundaries for A, B, and C drugs. For example—
  - A. Highest annual usage (accounts for 10 to 20 percent of items ordered and 70 to 80 percent of funds)
  - B. Moderate annual usage (accounts for 10 to 20 percent of items ordered and 15 to 20 percent of funds)
  - C. Lowest annual usage (accounts for 60 to 80 percent of items ordered and 5 to 10 percent of funds)
- 8. Present the results graphically. Plot the percentage of total cumulative value on the vertical or y-axis versus the item number on the horizontal or x-axis.

After completion of the ABC analysis it is necessary to carefully evaluate the results in each class, especially class A. Analysis of the data will provide important information concerning drug selection, procurement, and rational drug use.

## **VEN Analysis**

The VEN system, in which drugs are divided according to their health impact into vital, essential, and nonessential categories, is a well-known method to help set priorities for purchasing drugs and keeping stock. The DTC should be involved in the application of this system to the formulary by identifying the VEN class for all drugs approved for the formulary.

- V: Vital drugs—potentially lifesaving, have significant withdrawal side effects (making supply mandatory), or are crucial to providing basic health services
- E: Essential drugs—effective against less severe but nevertheless significant forms of illness, but not absolutely vital to providing basic health care
- N: Nonessential drugs—used for minor or self-limited illnesses; may be formulary items
  and may be very important, but are the least important of items stocked in the health care
  system

There are many ways managers can decide how to focus their efforts to improve their drug supply. In terms of drug procurement and inventory management, one way to identify priorities is by applying the VEN system. Regardless of how well a supply system works, there will always be more opportunities to improve the system than you have time and resources to address. Therefore, the DTC and managers of drug supply must narrow down the scope of what is manageable and what will provide the best return for their efforts.

This system helps the manager to set priorities for the selection, procurement, and use of drugs according to the potential health impact of individual drugs. The main objective is to give priority to essential, lifesaving drugs as opposed to expensive, nonessential items.

- The VEN analysis requires that managers be able to assign the drugs in inventory to a category of "Vital," "Essential," or "Nonessential." Assignment to the "Nonessential" category does not mean that the drug is no longer on the system's formulary or essential drug list. It indicates that the drug may be considered a lower priority than other drugs on the list.
- VEN classification should be done on a regular basis, as the formulary or essential drug list is updated, or as public health priorities change.
- Some systems find it difficult or not useful to use three categories. Some programs prefer
  to use a system of two categories (for example, Vital and Nonessential). Regardless of the
  categories that are used, they should be relevant and allow for clear prioritization among
  the items.
- Drug ordering and stock monitoring should be directed at vital and essential drugs.
- Safety stocks should be higher for vital and essential items.
- VEN should be used to ensure that enough quantities of vital and essential drugs are bought first.
- Only reliable suppliers should be used for vital and essential drugs.
- Popularity of the drug should be of minimal importance. The criteria of proven efficacy and cost-effectiveness should prevail.

The steps in conducting a VEN analysis are as follows:

- 1. Classify all drugs on the list as V, E, or N.
- 2. Analyze N items. Where possible, reduce quantities to purchase or eliminate purchases entirely.
- 3. Identify and limit therapeutic duplications.

- 4. Reconsider proposed purchased quantities.
- 5. Find additional funds if needed or possible.

The VEN system provides a valuable service to the health care system. No matter what current funding is, the DTC (and procurement department) will know what the priorities are for ordering drugs.

#### PATIENT RECORD REVIEWS

Patients' medication records are excellent sources of information on drug use. These records will provide data on drug use as well as disease-specific information. Chart reviews can be used for the following to identify health care and drug use problems (some of these indicators have been discussed in the WHO indicator section [see page VII-4]):

- Drug audits that would include appropriate drug, dose, quantity, drug interactions, contraindications, etc.
- Control drug reviews
- Laboratory monitoring of drugs
- Adverse drug reactions reports
- Standard treatment guideline compliance
- Patient education documentation
- Diagnosis-specific criteria (e.g., physical exam, laboratory, history)
- Patient outcome data (e.g., resolution of infectious disease, control of hypertension or diabetes, surgical repair of hernia, improved quality of life)
- Health promotion concepts (e.g., smoking cessation, exercise programs, diet counseling)
- Prenatal care including appropriate drug therapy and use of prenatal vitamins
- Immunization status
- Appropriate antimicrobial use including therapeutic and prophylactic
- Drug and treatment cost-effectiveness information

When large numbers of records are surveyed, statistics can be generated that would provide information on many different aspects of drug therapy. Examples are number of drugs per patient, percentage of patients receiving injections, percentage of patients receiving antibiotics, incidence of adverse drug reactions, and percentage of patients treated within standard treatment guidelines.

As descriptive studies become very large in terms of numbers and data collected, it will likely become necessary to use a computer and associated software. PASS (Prescription Analysis Software System) is a computer software program that can aid a DTC in analyzing extensive drug use data and produce reports. This program was developed by Management Sciences for Health to assist public health sector programs in analyzing data from chart reviews and other sources.

When chart reviews have identified drug problems, these should be documented and reported to the DTC. A descriptive report that lists chart numbers, provider, indicators reviewed, and results needs to be prepared. As with any other programs that identify drug use problems, the DTC must devise a plan to correct or improve the situation.

#### DRUG USE EVALUATION

Drug use evaluation (sometimes referred to as drug utilization review) is a method of obtaining information and identifying problems in drug utilization. When developed and implemented properly, DUE will provide a mechanism to identify drug use problems as well as provide a means to correct the problem. DUE can be defined as a system of ongoing, systematic, criteria-based drug evaluations that will help ensure that appropriate drug use is provided. If therapy is determined to be inappropriate, interventions with providers or patients will be necessary to optimize drug therapy.

A DUE can be structured so that it will assess the actual process of administering or dispensing a drug, e.g., appropriate indications, dose, drug interactions, or assess the outcomes, e.g., cured infections, decreased lipid levels, etc. Objectives of a DUE include—

- Identifying areas in which further information and education may be needed for health care providers
- Ensuring that the drug therapy meets current standards of care
- Creating guidelines (criteria) for appropriate drug utilization
- Enhancing responsibility/accountability in the drug use process
- Controlling drug cost
- Promoting optimal medication therapy

- Preventing medication-related problems
- Evaluating the effectiveness of medication therapy
- Stimulating improvements in medication use

The concepts of using DUEs are discussed in more detail in Sessions 8 and 10 of this training program. The reader is encouraged to study those sessions in order to obtain more information concerning this method of identifying drug use problems.

#### **ACTIVITIES**

## **Activity 1. Performing an ABC Analysis**

Generally, a few drug items will account for the majority of funds used, and many other drug items will account for a smaller fraction of funds used. ABC analysis is a simple but powerful technique that can be used to critically review how drugs are utilized and how funds are spent in a drug system. In this activity, you will conduct an ABC analysis in a stepwise approach using procurement and consumption data. These data will be valuable to the DTC as they will show how certain drugs are using larger percentages of the budget and where there may be a need for closer evaluation by the DTC.

A therapeutic category analysis is also reviewed as part of this activity but may be considered optional.

- Review the eight steps for conducting an ABC analysis (page VII-10) and then complete Worksheets 1 and 2 (pages VII-17 and VII-19).
- Answer the following questions:
  - o How many "A" items are there? "B" items? "C" items?
  - What percentage of all items do "A" items represent? "B" items? "C" items?
  - What is the value of consumption for each category?
  - What percentage of the total consumption is represented by each category?
  - What particular product(s) may need to be reviewed more closely by the DTC because of their consumption?

## Worksheet 1. ABC Analysis

## **Results of Calculations and Ranking**

	Basic	<b>Unit Tender</b>	Total	Value	% Total	Rank by
Product Description	Unit	Price (US\$)	Units	(US\$)	Value	Value
Ampicillin 125mg/5ml powder for susp, 100ml	ВОТ	\$0.5119	43,970	22,508.74		
Benzoin, compound tincture	ML	.0067	532,000			
Benzylpenicillin 1MU inj	AMP	.5276	144,000			
Calcium gluconate 600mg tab	TAB	.0032	995,000			
Chlorhexidine 5% solution	ML	.0073	2,504,000			
Chlorhexidine+Cetrimide 1.5%+15% sol	ML	.0064	1,552,000			
Chloroquine 50mgbase/ml syrup	ML	.0014	5,610,000			
Chloroxylenol 5% solution	ML	.0034	10,728,000			
Chlorpheniramine maleate 4mg tab	TAB	.0009	555,000			
Codeine phosphate 15mg/5ml linctus	ML	.0052	490,000			
Co-trimoxazole 400mg/80mg tab	TAB	.0098	860,000			
Dipyrone 500mg/ml inj, 5ml	AMP	.0898	65,000			
Erythromycin 250mg tab	TAB	.0350	262,000			
Ferrous salt, equiv. to 60mg iron tab	TAB	.0007	3,280,000			
Fortified procaine penicillin 4MU inj	VIAL	.3026	100,000			
Gentamicin sulfate 80mg inj, 2ml	AMP	.0628	130,800			
Hydrogen peroxide 6% solution	ML	.0016	632,000			
Hyoscine N-butylbromide 10g tab	TAB	.0174	380,000			
Metronidazole 200mg tab	TAB	.0052	1,080,000			
Metronidazole 200mg/5ml susp	ML	.0055	900,000			
Multivitamin tab/caps	TAB	.0022	3,395,000			
Nitrofurantoin 100mg tab	TAB	.0055	860,000			
Oxytocin 10IU inj, 1ml	AMP	.2468	14,500			

## **Results of Calculations and Ranking (continued)**

	Basic	Unit Tender	Total	Value	% Total	Rank by
Product Description	Unit	Price (US\$)	Units	(US\$)	Value	Value
Phenobarbitone 60mg tab	TAB	\$0.0047	135,000			
Piroxicam 20mg capsules	CAP	.0099	97,000			
Prednisolone 8mg tab	TAB	.0079	65,000			
Propranolol 40mg tab	TAB	.0067	33,000			
Pseudoephedrine 60mg/Triprolidine 2.5mg tab	TAB	.0536	100,000			
Vitamin B complex tab	TAB	.0025	1,440,000			
Water for injection 10ml	AMP	.0287	220,500			

#### **TOTAL VALUE**

## Worksheet 2. ABC Analysis – Answer Sheet

## **ABC Analysis Answer Sheet**

	,,	Basic	Unit Tender	Total	Value	% Total	Cumulated
	Product Description	Unit	Price (US\$)	Units	(US\$)	Value	% of Value
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

## ABC Analysis Answer Sheet (continued)

		Basic	<b>Unit Tender</b>	Total	Value	% Total	Cumulated
	Product Description	Unit	Price (US\$)	Units	(US\$)	Value	% of Value
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
	TOTAL						

## **Activity 2. Performing a VEN Analysis**

There are many ways the DTC and drug supply managers can decide how to focus their efforts to improve their drug supply. In terms of drug management and procurement, one way to identify priorities is by applying the VEN system. This system helps the manager to set priorities for the selection, procurement, and use of drugs according to the potential health impact of individual drugs. The main objective is to give priority to essential, lifesaving drugs as opposed to expensive, nonessential items.

The VEN analysis requires that managers be able to assign the drugs in inventory to a category of "Vital," "Essential," or "Nonessential." Assignment to the "Nonessential" category does not mean that the drug is no longer on the system's formulary or essential drug list. It indicates that the drug may be considered a lower priority than other drugs on the list.

- Form a small group to represent a drug selection committee. Have the completed **Worksheets 1 and 2** on hand.
- Your hospital has received the new budget for the next annual procurement. It is \$250,000. This is \$46,046 less than what was used in the previous procurement presented in the ABC analysis on the worksheet.
- Apply the VEN system to the drugs listed and answer the following questions:
  - Which drugs would you give lower priority for next year's procurement?
  - Would you reconsider any quantities? Why?
- Select a representative from your group to present your conclusions to the larger group.

#### **SUMMARY**

There are numerous methods to obtain information about drug use. We have discussed a few important areas, including use of health facility and drug use indicators, ABC/VEN analysis, and collection and analysis of aggregate data including the use of defined daily dose methodology. A DTC should be aware of these tools to identify drug use problems and periodically utilize these to assess the current drug use situation.

It is very difficult to actually see many of the drug use problems that may occur in a particular health care setting. Some will always be obvious, but the vast majority will take analysis and evaluation before they may appear to adversely affect patient care. This close analysis will produce useful information on drugs and therapeutics that need more in-depth evaluation by the Drug and Therapeutics Committee.

